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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/530,720

04/08/2005

Masahiro Kimata

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05/30/2006

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EXAMINER

BEHM, HARRY RAYMOND

ART UNIT

PAPER NUMBER

2838

DATE MAILED: 05/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/530,720

Applicant(s)

KIMATA ET AL.

Examiner

Harry Behm

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11 and 15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 4, 8 and 9 is/are rejected.
- 7) ☒ Claim(s) 2, 5-7, 11 and 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>4/8/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Controlling an inverter to reduce transmission overvoltages.

Claim Objections

Claim 1 is objected to because of the following informalities: It is unclear whether applicant is claiming the time of outputting of the zero-voltage vector is zero or whether applicant is claiming the time of outputting of the zero-voltage is longer than zero. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 3 and 4 state "the voltage-vector control unit receives the voltage vector output" which contradicts claim 1 in which "a voltage-vector control unit that determines ... a voltage vector output".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Rouaud (US 5,684,688).

With respect to Claim 1, Rouaud discloses an apparatus for controlling a power converter in which an output voltage is controlled by pulse-width-modulation control, the apparatus comprising: a voltage-vector control unit (Fig. 5 22) that determines, based on a voltage instruction value [desired output] for the power converter, a voltage vector output [power switch gate commands] from the power converter (Fig. 5) in one control cycle [switching cycle] of the pulse-width-modulation control (Fig. 4 shows PWM output) and time [power switch gates commands updated at specific times] of outputting of the voltage vector; a voltage-vector adjusting unit (Fig. 5 22) that adjusts the time of outputting of the voltage vector so that the time of outputting of a zero-voltage vector [when the output voltage is zero] is longer (paragraph 12 “Vout potential never switches form +Vdc to –Vdc or vice versa without first switching to the zero output voltage” therefore the zero-voltage vector, when there is zero output voltage, is always longer than the fixed time of zero) than a fixed time [fixed time equal to zero] or zero; and a firing-pulse generating unit (Fig. 5 22) that generates a signal (Fig. 5 32,34,36) for turning on and off a semiconductor switching element (Fig. 6 SW1,SW2,SW3 and SW4) included in the power converter based on the time of outputting of the voltage vector as adjusted by the voltage-vector adjusting unit (Fig. 19).

With respect to Claim 8, Rouaud discloses the apparatus according to claim 1, wherein the voltage-vector adjusting unit (Fig. 5 22) adjusts the time of outputting of the voltage vector [PWM gate commands] so that the time of outputting of the zero-voltage vector [PWM gate commands zero output voltage, Fig. 6 SW2 and SW3 on] is ensured at least for the fixed time [time is guaranteed to be greater than the fixed time of zero].

Claims 1 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kerkman (US 5,684,688).

With respect to Claim 1, Kerkman discloses an apparatus for controlling a power converter in which an output voltage is controlled by pulse-width-modulation control, the apparatus comprising: a voltage-vector control unit (Fig. 4 20) that determines, based on a voltage instruction value [desired output voltage] for the power converter (Fig. 4 18), a voltage vector output [power switch gate commands] from the power converter in one control cycle of the pulse-width-modulation control (Fig. 3 shows PWM) and time [power switch commands updated at specific times] of outputting of the voltage vector; a voltage-vector adjusting unit (Fig. 4 7) that adjusts the time of outputting of the voltage vector so that the time of outputting of a zero-voltage vector [line to line voltage is zero] is longer than a fixed time or zero (Fig. 6f Tau13); and a firing-pulse generating unit (Fig. 4 11) that generates a signal for turning on and off a semiconductor switching element (Fig. 4 12-17) included in the power converter based on the time of outputting of the voltage vector as adjusted by the voltage-vector adjusting unit (Fig. 6f).

With respect to Claim 9, Kerkman discloses the apparatus according to claim 1, wherein the voltage-vector adjusting unit (Fig. 4 7) adjusts time of outputting of the

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voltage vector [power switch gate commands] so that the time of outputting of the zero-voltage vector is ensured at least for the fixed time [fixed time at least zero] without changing a relative ratio [average output voltage] of output times of voltage vectors other than the zero-voltage vector.

Allowable Subject Matter

Claims 2 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and if the objection to the indefiniteness of claim 1 was removed.

The following is an examiner's statement of reasons for allowance: The prior art does not disclose or suggest, in combination with the limitations of the base claim and any intervening claims performing a minimum pulse width rejection on the zero-voltage vector time such that the zero-voltage vector is not issued when the zero-voltage vector would be less than a predetermined time.

Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and if the objection to the indefiniteness of claim 1 was removed.

The following is an examiner's statement of reasons for allowance: The prior art does not disclose or suggest, in combination with the limitations of the base claim and any intervening claims waiting at least one cycle before the zero-voltage vector is issued if the prior vector was the zero-voltage vector.

Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and if the objection to the indefiniteness of claim 1 was removed.

The following is an examiner's statement of reasons for allowance: The prior art does not disclose or suggest, in combination with the limitations of the base claim and any intervening claims modifying the zero-voltage vector time based on the prior zero voltage vector.

Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and if the objection to the indefiniteness of claim 1 was removed.

The following is an examiner's statement of reasons for allowance: The prior art does not disclose or suggest, in combination with the limitations of the base claim and any intervening claims modifying the voltage vector based on the present zero voltage vector time being zero.

Claim 15 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and if the objection to the indefiniteness of claim 1 was removed.

The following is an examiner's statement of reasons for allowance: The prior art does not disclose or suggest, in combination with the limitations of the base claim and

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any intervening claims modifying the voltage vector based on the prior zero voltage vector.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Thunes (US 7,034,501), Kerkman (US 6,819,070), (US 6,469,916), (US 5,917,721), Leggate (US 6,541,933), Sul (US 6,185,115 and Inaba (US 4,833,586) disclose inverters for reducing transmission overvoltages.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry Behm whose telephone number is 571-272-8929. The examiner can normally be reached on Business EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on 571-272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system; call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


KARL D. EASTHOM
PRIMARY EXAMINER